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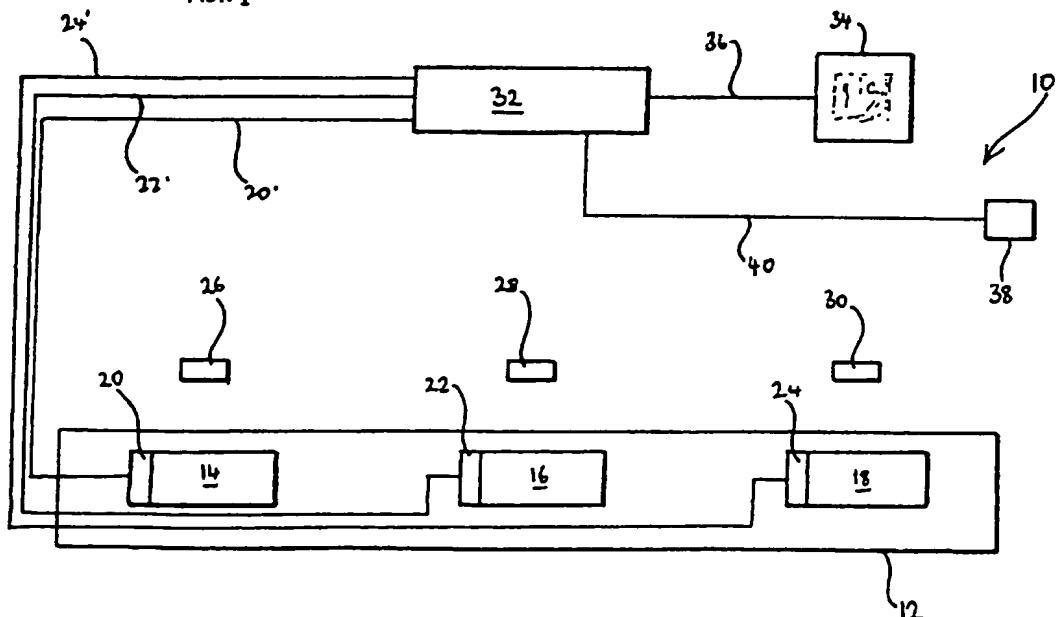
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GB 2283601 A US 5245163 A

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## (54) Service point monitoring system

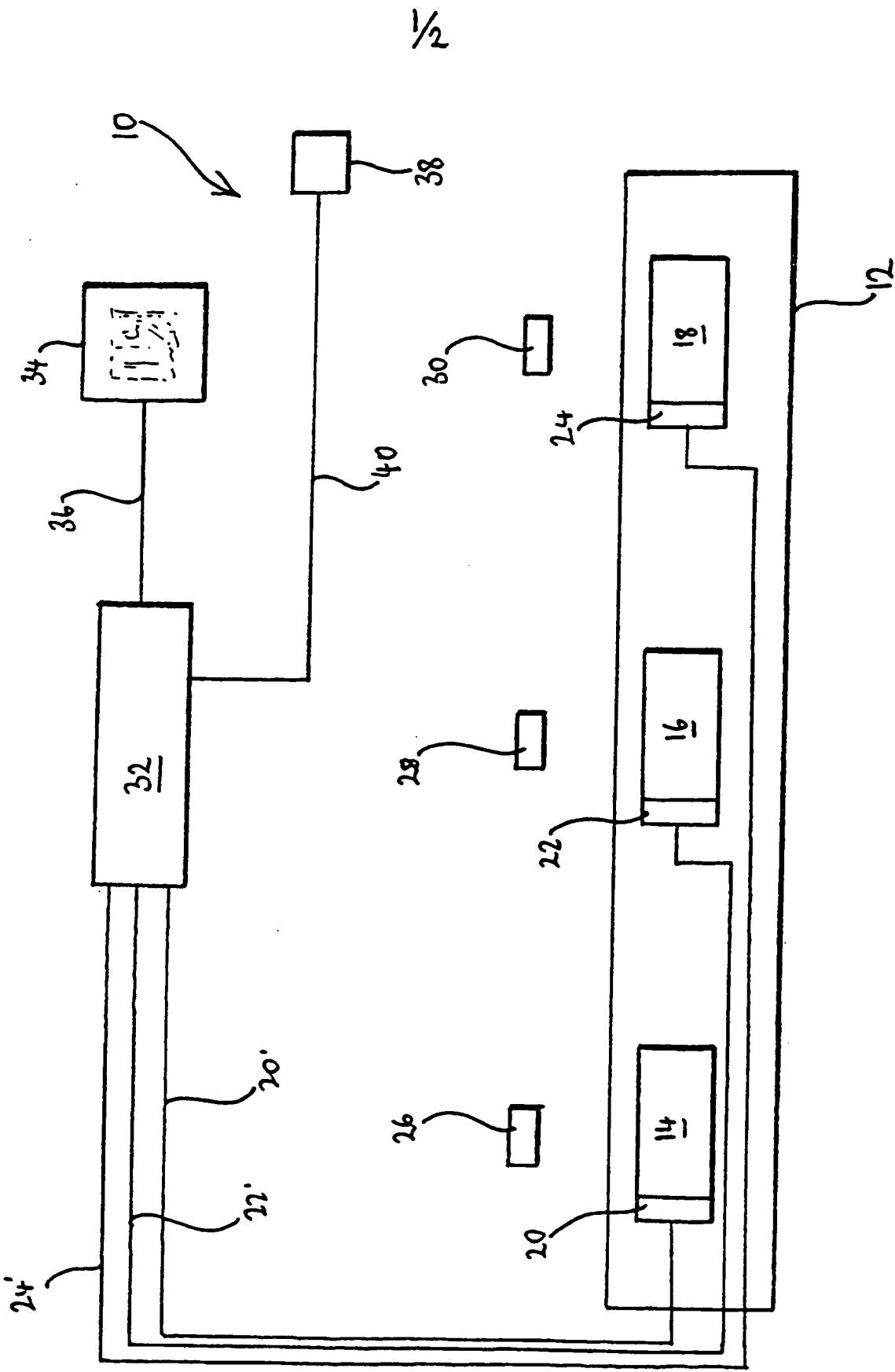
(57) Service point apparatus comprises a plurality of service points 14, 16, 18, accessible by a plurality of service personnel 26, 28, 30, for serving customers, indicating means 34 operable by the service personnel when adjacent the service points for indicating the next customer to be served, means 32, for identifying which one of the service personnel operates the indicating means, and means, 38 and 32, for determining for each of the plurality of service personnel the period between consecutive operations of the indicating means. The service points may be locations along a supermarket counter 12. Service personnel may operate the indicating means either by actuating an associated individual button at any of the service points or by transmitting a signal from a portable apparatus to a receiver of the indicating means. The apparatus enables service personnel to operate the indicating means from whichever position they happen to finish serving a customer, and keeps a record of the length of time taken to serve each customer.

Fig. 1



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Fig. 1



2/2

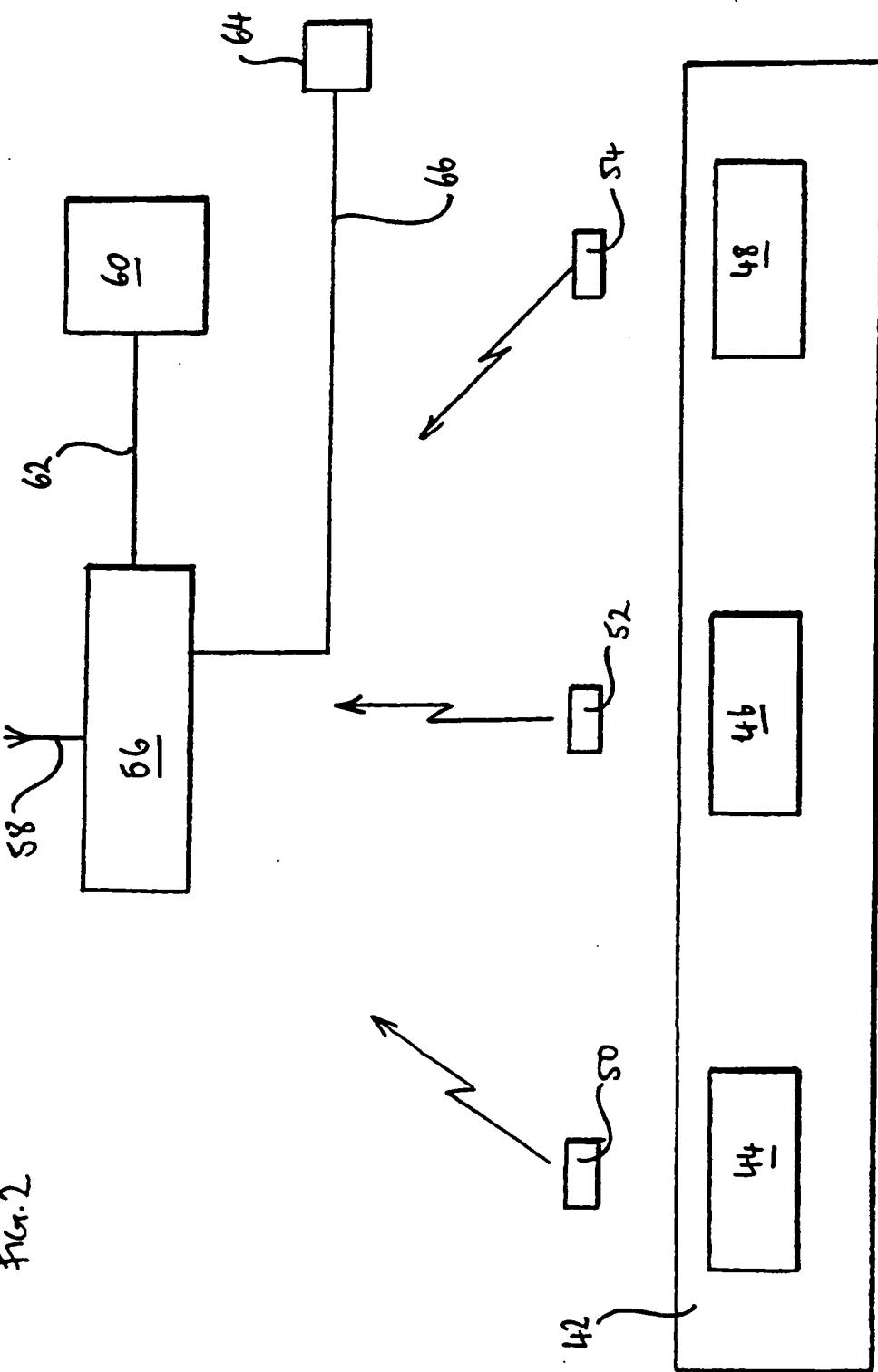


Fig. 2

SERVICE POINT MONITORING APPARATUS AND METHOD

The present invention relates to a service point monitoring apparatus and method and in particular, but not 5 exclusively, to an apparatus and method for monitoring service activities in a retail service environment.

It has long been known to provide a variety of management systems at service point locations which have as their primary 10 object the increase in the efficiency with which a plurality of customers can be served and a decrease in the general inconvenience suffered by such customers while waiting to be served and, in particular, a decrease in the time spent queuing for the various services available.

15

In addition to managing a customer queue, such apparatus can also assist in providing information concerning the activities of service personnel at one or more service points and this can prove particularly useful for providing reports 20 and analysis of service personnel activities.

However, the monitoring of service personnel activities can be disadvantageously restricted if particular services are being provided in an environment which requires the continual 25 movement of the service personnel away from any one particular service point.

Such service environments are often found at fresh-food counters within supermarkets where ticketing systems are 30 commonly employed to provide for the controlled serving of a plurality of customers. The very nature of the range of produce available requires the use of a service counter which is so long as to require movement of each customer along the counter in order to view and select a variety of produce, for 35 example fish, fresh meat and cheese etc.

Whilst conventional ticketing systems of this nature can capture information between the point at which a customer takes a numbered ticket from the ticket dispenser, to the point where the customer is actually called for service, the  
5 lack of any further monitoring during the dealing with any one customer disadvantageously restricts both the manner in which the service point can be monitored so as to reduce queuing times for the customers, and also the manner in which the serving activities of the service personnel can be adequately  
10 monitored. Staff scheduling activities are therefore disadvantageously restricted.

The present invention therefore seeks to provide a service point monitoring apparatus and method having  
15 advantages over known such apparatus and methods.

In accordance with a first aspect of the present invention, there is provided service point apparatus comprising a plurality of service points accessible by a plurality of service personnel for serving customers, indicating means operable by said service personnel when adjacent said service points for indicating the next customer to be served, means for identifying which one of said plurality of service personnel operates said indicating means  
20 each time said indicating means is operated and irrespective of the service point said one of said plurality of service personnel is adjacent, and the means for determining for each of said plurality of service personnel the period between consecutive operations of said indicating means by each of  
25 said plurality of service personnel.  
30

The apparatus is therefore advantageous in allowing for the capture of the actual transaction length for each customer and this can prove particularly advantageous for staff  
35 scheduling purposes.

As will be appreciated, the transaction length for each customer can be accurately ascertained irrespective of the number of service points at which the customer may have to be served during the course of the transaction, and, in particular, irrespective of whether the final service point corresponds to the initial service point for that customer. Thus, whatever service point one of the service personnel finds himself adjacent at the time of closing one transaction, he can initiate the calling of the next customer to be served so as to commence the next transaction.

The particular advantage of the present invention is that the apparatus can recognise which one of a plurality of servers is making the request for the next customer come forward for serving.

Preferably, each service point comprises servicing apparatus and, in particular, product processing or product handling apparatus.

In one embodiment, the service point can comprise product weighing, marking and/or pricing apparatus wherein a plurality of such apparatus is provided at spaced locations along a counter found at the service locations.

The indicating means can advantageously comprise visual indicating means which may advantageously be of a alpha-numeric nature. In particular, the indicating means can comprise a number indicating system for indicating any one of the numbers 1-99.

Alternatively, the indicating means can comprise audio indicating means which may advantageously be in the form of a voice-synthesised audio output means. Further, the indicating means can advantageously comprise a combined audio/visual indicating means so as to increase the range of

indicating signals that can be provided.

The apparatus also advantageously includes means for driving the indicating means which are responsive to 5 activation by said service personnel.

In particular, the means for driving the indicator means may include switch means which can be activated by a tactile member such as a push-button or keypad. Advantageously, the 10 means for driving the indicating means is associated with said means for identifying which one of said plurality of service personnel operates said indicating means.

In one particular embodiment of the present invention, 15 there is provided a plurality of means for driving the indicator means wherein each one of said plurality of means for driving the indicating means is associated with respective one of said plurality of service personnel. In an advantageously simplified embodiment of the present invention, 20 said plurality of means for driving said indicating means can be coded for ready identification by said plurality of service personnel and, in particular, can be colour-coded for that purpose.

25 In order to provide for a particularly compact structure of the present invention, a plurality of means for driving said indicating means can be associated with each of said plurality of service points. Thus, tactile means for each one of said plurality of service personnel can be provided as part 30 of, or at a location approximate to, each one of said plurality of service points.

The present invention can then be achieved in a particularly effective manner by providing for a plurality of 35 means for driving said indicating means which can be identified by, and only used by, respective members of said

plurality of service personnel.

The apparatus of the present invention can then be readily incorporated for use with currently available service  
5 point apparatus.

In a further embodiment of the present invention, the means for driving said indicating means can include receiving means for receiving signals transmitted from transmitting means associated with each of said plurality of service  
10 personnel.

The receiving means can advantageously be arranged to receive an electromagnetic radiation signal and so can then  
15 advantageously be located at a suitable location in the said service environment for receiving signals from said transmitting means when located anywhere within said service environment.

20 Said receiving means can then advantageously be provided as a single receiving means or as a plurality of receiving means wherein one of said plurality of receiving means can be associated with each of said service points.

25 According to a particularly advantageous embodiment of the present invention, a plurality of said transmitting means are provided wherein each is arranged to be associated with a respective one of said plurality of service personnel in the manner whereby it can be carried by its associated member of  
30 said service personnel throughout the service environment. Thus, irrespective of the location within the service environment of the service personnel, the means for driving the indicating means can be quickly and efficiently activated.

35 The transmitting means can advantageously be arranged to transmit a composite signal confirming not only that the

indicating means should be driven so as indicate that the next customer should be served, but also providing an indication of the member of the service personnel making that request.

5        In this manner, the receiving means is advantageously arranged to receive such a composite signal and to retrieve the information identifying which one of said plurality of service personnel is making the request.

10       As will be appreciated, any appropriate form of link, for example radio, microwave or infra-red, can be provided between the transmitting means and the receiving means.

15       Advantageously, the means for determining the said period between consecutive operations of said indicating means advantageously comprises means for monitoring signals originating from said means for driving said indicating means. Further, said means for determining the period between consecutive operations of said indicating means can include  
20       storage means and timer means operable in response to signals derived from said means for driving said indicating means.

Additional storage means can also be provided along with  
means for indicating the said period between consecutive  
25       operations by any one of said service personnel.

The means for indicating the period can provide for an electronic and/or hard copy indicating the period determined.

30       In a particularly advantageous embodiment of the present invention, processing means can be provided for handling the identification of which one of said plurality of service personnel operates the indicating means and for determining for each of said plurality of service personnel the period  
35       between consecutive operations of said indicating means.

The processing means advantageously also includes the means for receiving staff availability information so as to assist in staff scheduling operations.

5       The apparatus of the present invention can also include log on/off means by which the plurality of service personnel can confirm for the apparatus their location in, or absence from, the servicing area.

10       As will be appreciated, the apparatus of the present invention, particularly when including the processing means, can capture not only information relating to the moment at which a customer takes a ticket from a ticket dispenser and the moment at which that customer is initially served, but can  
15       also capture the actual transaction length for each customer and this advantageously enhances the degree and accuracy of staff scheduling that can be achieved.

20       According to another aspect of the present invention, there is provided a method of monitoring a service location comprising of plurality of service points accessible by a plurality of service personnel for serving customers and having indicating means operable by said service personnel when adjacent said service points for indicating the next  
25       customer to be serviced, comprising the steps of identifying which one of said plurality of service personnel operates said indicating means irrespective of the service point said one of said plurality of service personnel is adjacent each time said indicating means is operated, and determining for each  
30       of said plurality of service personnel the period between consecutive operations of said indicating means by each of said plurality of service personnel.

35       Preferably, each of said plurality of service personnel is identified on the basis of an identifying signal derived from apparatus arranged to be associated with each of said

plurality of service personnel and for driving said indicating means.

Advantageously the information obtained during the identification of which one of said plurality of service personnel operates said indicating means, and the period between consecutive operations of said indicating means by each of said plurality of service personnel, is delivered to processing means.

10

Advantageously, the identification of which one of said plurality of service personnel operates said indicating means can be arranged to be achieved by the appropriate monitoring of means for operating said indicating means.

15

The present invention can therefore provide for a method by which the management of staffing levels and requirements can be readily and effectively achieved at a service location having a plurality of service points.

20

The invention is described further hereinafter, by way of example only, with reference to the accompanying drawings in which :

25

Fig. 1 is a block diagram illustrating apparatus according to one embodiment of the present invention; and

Fig. 2 is a block diagram illustrating apparatus according to another embodiment of the present invention.

30

With reference to Fig. 1, there is shown a block diagram representing service point apparatus 10, for example that found at a delicatessen counter in a supermarket.

35

The apparatus comprises a counter 12 having three service points, for example weighing scales, 14, 16, 18 spaced along

the length thereof and arranged to be used by a plurality of service personnel in a normal manner for weighing and labelling produce selected by the customers at the counter 12.

5       Each of the weighing scales 14, 16, 18 is associated with a respective signal receiver 20, 22, 24 arranged to receive an infra-red signal from one of a plurality of transmitters 26, 28, 30 when in the vicinity thereof.

10      For clarity, Fig. 1 illustrates the transmitter 26 in the vicinity of the receiver 20, the transmitter 28 in the vicinity of the receiver 22 and the transmitter 30 in the vicinity of the receiver 24.

15      However, as will be clearly understood from an appreciation of the concept of the present invention, the receivers 20, 22, 24 can receive infra-red signals from any one of the transmitters 26, 28, 30 when adjacent thereto.

20      Each of the transmitters 26, 28, 30 is arranged to be carried by respective service personnel and can advantageously be arranged to be belt -, or pocket-mounted. Each transmitter is provided with a tactile member, for example a push button, which can be arranged to control the transmission of an infra-red signal which is then received by whichever one of the receivers 20, 22, 24 is in the vicinity of the transmitter 26, 28, 30.

30      Each transmitter 26, 28, 30 is arranged to transmit a signal to the receivers 20, 22, 24 which is not only used to indicate that the next customer can now be served but also identifies which one of the plurality of service personnel is making the request that the next customer come forward for serving. Thus, each of the transmitters 26, 28, 30 omits a signal which identifies the particular one of the plurality of service personnel carrying that particular transmitter.

A processing unit 32 is provided which receives signals delivered from the receivers 20, 22, 24 by way of the signal lines 20', 22', 24', and monitors these received signals so as to retrieve the information within the signal identifying 5 which one of the plurality of service personnel has requested that the next customer come forward for serving.

The processor 32 can advantageously be programmed each time a new member of the service personnel commences work at 10 the counter 12 by receiving a test transmission from the transmitter of that new member of the service personnel so that all future transmissions can be identified as those of that new member.

15 As will be appreciated, the processor 32 is also arranged to drive a ticket number indicator 34 which has a two-digit display indicating the ticket number belonging to the next customer to be served. The ticket number indicator 34 is driven by way of line 36 by the processor 32 in a manner such 20 that each time the processor 32 receives a signal from one of the infra-red receivers 20, 22, 24 associated with the weighing scales 14, 16, 18, the two digit display of the ticket number indicator 34 is incremented by one.

25 As of course will be appreciated, when new customers arrive at the counter 12 they collect a ticket from a ticket dispenser 38 which, in the embodiment illustrated in Fig. 1, is connected by a signal line 40 to the processor 32 so that the processor can monitor the rate at which tickets are 30 withdrawn from the ticket dispenser 38. As and when a particular customer's ticket number is displayed in the ticket number indicator 34, that customer then realises that one of the plurality of service personnel is ready to attend to the customer's request.

receivers 20, 22, 24, the processing unit 32 not only increments the ticket indicator 34 as discussed above, but can also identify which one of the plurality of service personnel has requested that the ticket number indicator 34 be  
5 incremented by one. The processor 32 includes monitoring, storage and timer means whereby it can readily determine the period that expires between two consecutive requests arising from the same member of the service personnel.

10 In this manner, the present invention can therefore advantageously capture information relating to the length of time that any one or more of the plurality of service personnel were engaged in any particular transaction. This can be achieved in the particularly simple manner of the  
15 present invention by monitoring when a particular one of the plurality of service personnel makes his next request that the ticket number indicator 34 be incremented and so indicates that the preceding transaction has therefore just been completed.

20 A particularly advantageous aspect of the present invention is the manner in which the activity of each of the plurality of service personnel can be identified by the processing unit 32 irrespective of the particular location of  
25 the service personnel along the length of the counter 12.

As quite commonly arises with such counters, a member of the service personnel may commence serving a customer at one location at the counter but may then have to complete serving  
30 that customer at the opposite end of the counter 12. For example therefore, although a particular customer may have been initially served by a server activating infra-red transmitter 26 so as to transmit a call signal to the infra-red receiver 20 which in turn causes the processing unit 32  
35 to increment the ticket number indicator 34, by the time that all of that particular customer's service requests have been

met, the server may then find himself in the vicinity of weighing scales 18, i.e. those scales located at the opposite end of the counter 12 from the location at which that particular customer's transaction commenced.

5

However, since each of the infra-red receivers 20, 22, 24 associated with the three weighing scales 14, 16, 18 can receive a signal from any of the three infra-red transmitters 26, 28, 30, the particular server concerned merely has to 10 activate his infra-red transmitter when in the vicinity of the weighing scales 18 at which he is now located so as to cause the processing unit 32 to again increment the ticket number indicator 34. Thus, irrespective of the server's location along the counter 12, i.e. the point at which the preceding 15 transaction was completed, the processing unit 32 then advantageously and effectively receives an indication when a new transaction is to be opened, and thus the previous transaction is closed.

20 In receiving information not only relating to the driving of the ticket number indicator 34 but also relating to the identity of which one of the plurality of service personnel and requesting that the ticket number indicator 34 be incremented and the rate at which tickets are withdrawn from 25 the ticket dispenser 38, the processing unit 32 can quite readily determine, process and display information for use in staff scheduling purposes and so assist in achieving a more efficient and effective service for the customers at that particular counter.

30

Fig. 2 illustrates service point monitoring apparatus according to another embodiment of the present invention which, for clarity, again comprises a counter, for example a delicatessen counter 42, three weighing scales 44, 46, 48 35 spaced there along and three signal transmitters 50, 52, 54 associated with three respective service personnel. Also,

there is provided a processing unit 56 having an antenna 58 and connected to a ticket number indicator 60 by way of a control line 62, and a ticket dispenser 64 by way of a signal line 66.

5

In the embodiment of Fig. 2, each of the transmitters 50, 52, 54 is again arranged to be readily carried/worn by respective members of the service personnel and each is arranged to transmit an electromagnetic signal such as a radio wave or microwave signal. These signals are transmitted within the area of the counter 42 and are received by a common antenna 58 of the processing unit 56.

Thus, as before, irrespective of the actual location of any one of the service personnel within the service area, the processing unit 56 is able to receive a signal which not only serves to increment the ticket indicator 60 but also identifies which one of the plurality of service personnel is making that particular request.

20

Thus, as with the embodiment of Fig. 1, the processor 56 can readily attend to the processing and generation of staff scheduling data through the monitoring of the signals transmitted from the transmitters 50, 52, 54 and from monitoring the dispensing of the tickets from the dispenser 64 and the subsequent display of those particular ticket numbers at the ticket number indicator 60.

The invention is not restricted to the details of the forgoing embodiments. For example any appropriate form of "next customer" indicator can be used and any appropriate form of signalling means can be used to replace the transmitters 26, 28, 30; 50, 52, 54. For example, a plurality of push-buttons, or keys, can be associated with each of the weighing scales and respective ones of those pluralities can be coded, for example colour coded, so as to be readily identified and

used by an appropriate one of the plurality of service personnel. Also, the processing unit can be arranged to receive separate signals for identifying the particular server concerned and for incrementing the ticket number indicator.

5

Of course, any particular number of service points, such as the weighing scales of Figs. 1 and 2, and transmitting means, can be provided dependent upon the size of the service area or counter and the number of service personnel employed.

10

It will be appreciated that variations in and modifications to the present invention as described above may be made within the scope of the present application.

CLAIMS

1. Service point apparatus comprising a plurality of service points accessible by a plurality of service personnel for serving customers, indicating means operable by said service personnel when adjacent said service points for indicating the next customer to be served, means for identifying which one of said plurality of service personnel operates said indicating means each time said indicating means is operated and irrespective of the service point said one of said plurality of service personnel is adjacent, and means for determining for each of said plurality of service personnel the period between consecutive operations of said indicating means by each of said plurality of service personnel.
- 15 2. Apparatus as claimed in Claim 1, wherein each service point comprises product processing or product handling apparatus.
- 20 3. Apparatus as claimed in Claim 1 or Claim 2, wherein said indicating means comprises visual alpha-numeric indicating means and/or a voice-synthesised audio output means.
- 25 4. Apparatus as claimed in any one of Claims 1 to 3, including means for driving the indicating means which are responsive to activation by said service personnel and are associated with said means for identifying which one of said plurality of service personnel operates said indicating means.
- 30 5. Apparatus as claimed in Claim 4, wherein there is provided a plurality of means for driving the indicator means wherein each one of said plurality of means for driving the indicating means is associated with respective one of said plurality of service personnel.

6. Apparatus as claimed in Claim 4 or Claim 5, wherein a plurality of means for driving said indicating means are associated with each of said plurality of service points.

5 7. Apparatus as claimed in any one of Claims 4 to 6, comprising a plurality of means for driving said indicating means which can be identified by, and only used by, respective members of said plurality of service personnel.

10 8. Apparatus as claimed in any one of Claims 4 to 7, wherein the means for driving said indicating means includes receiving means for receiving signals transmitted from transmitting means associated with each of said plurality of service personnel and further includes said transmitting means.

15 9. Apparatus as claimed in Claim 8, wherein a plurality of said transmitting means are provided wherein each is arranged to be associated with a respective one of said plurality of service personnel in the manner whereby it can be carried by 20 its associated member of said service personnel throughout the service environment.

10. Apparatus as claimed in Claim 8 or Claim 9, wherein said transmitting means are arranged to transmit a composite signal 25 confirming not only that the indicating means should be driven so as to indicate that the next customer should be served, but also providing an indication of the member of the service personnel making that request.

30 11. Apparatus as claimed in any one of Claims 4 to 10, wherein the means for determining the said period between consecutive operations of said indicating means advantageously comprises means for monitoring signals originating from said means for driving said indicating means.

12. Apparatus as claimed in any preceding claim, further comprising processing means for handling the identification of which one of said plurality of service personnel operates the indicating means and for determining for each of said plurality of service personnel the period between consecutive operations of said indicating means.

5  
13. Apparatus as claimed in Claim 12, wherein the processing means also includes means for receiving staff availability information so as to assist in staff scheduling operations.

10  
14. Apparatus as claimed in any preceding claim, which includes log on/off means by which the plurality of service personnel can confirm for the apparatus their location in, or  
15 absence from, the servicing area.

20  
15. A method of monitoring a service location comprising a plurality of service points accessible by a plurality of service personnel for serving customers and having indicating means operable by said service personnel when adjacent said service points for indicating the next customer to be serviced, comprising the steps of identifying which one of said plurality of service personnel operates said indicating means irrespective of the service point said one of said plurality of service personnel is adjacent each time said indicating means is operated, and determining for each of said plurality of service personnel the period between consecutive operations of said indicating means by each of said plurality of service personnel.

25  
30

35  
16. A method as claimed in Claim 15, wherein each of said plurality of service personnel is identified on the basis of an identifying signal derived from apparatus arranged to be associated with each of said plurality of service personnel and for driving said indicating means.



The  
Patent  
Office  
UK

Application No: GB 9509011.4  
Claims searched: All

Examiner: Mr. G. Nicholls  
Date of search: 21 June 1996

**Patents Act 1977**  
**Search Report under Section 17**

**Databases searched:**

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.O): G4T (TAA) G4H (HNND HNP)

Int Cl (Ed.6): G07C 11/00

Other: ONLINE: WPI

**Documents considered to be relevant:**

Category	Identity of document and relevant passage	Relevant to claims
A	GB 2283601 A (CHRISTIE) See particularly Page 7 lines 26 to 29	
A	US 5245163 (YEHUDA) See particularly Col. 4 lines 16 to 20	

X Document indicating lack of novelty or inventive step	A Document indicating technological background and/or state of the art.
Y Document indicating lack of inventive step if combined with one or more other documents of same category.	P Document published on or after the declared priority date but before the filing date of this invention.
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